STUDIES ON MEIOBENTHIC FAUNAL DIVERSITY OF KEHALDAM TQ. JINTUR DIST PARBHANI. (MS) INDIA

A

Synopsis

Submitted to

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स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड.

For the registration of

Doctor of Philosophy

In

ZOOLOGY

(Faculty of Science)

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STUDIES ON MEIOBENTHIC FAUNAL DIVERSITY OF KEHAL DAM TQ. JINTUR, DIST. PARBHANI

Introduction:

Freshwater is consistently renewed by rain and snowfall available on a sustainable basis, and it is found in lakes, rivers, reservoirs, and underground sources. Due to increased human population, development of agriculture, industrialisation, and urbanisation, freshwater ecosystems are among those that are most at risk of being degraded and drastically altered through habitat loss. Ephemeral pools, streams, enormous natural lakes, artificial reservoirs, and the riverine system are only a few examples of the freshwater biotopes. Among these, lentic habitats support a diverse range of aquatic creatures and significantly increase the productivity of the water. Consequently the information about the structure, composition and production of freshwater communities in general and plankton in particular are therefore.

In 1942, Mare initially used the term "meiobenthos." Meiobenthos is a term for animals that reside on the ocean floor and means microscopic organisms. It is derived from the Greek word 'meio' means Smaller than macrofauna and larger than microfauna, respectively. These animals are smaller than those traditionally called "macrobenthos" but larger than the "microbenthos" (i.e. algae, bacteria and protozoa). There is a wide diversity in the habitats of meiofauna. Some meiofauna are interstitial (moving between the sediment particles), others are burrowing (moving through or displacing sediment particles). While, still others have an epibenthic or phyla existence. Meiofauna is the preferred term to refer to the organisms that live interstitially. The cycling of nutrients is frequently carried out by the meiobenthos, which is a crucial component of the ecosystem. Meiobenthos are most frequently seen in freshwater and

deep marine sedimentary settings. On firm terrain, they can also be found feeding on sessile invertebrates (Barnacles, Mussele beds etc).

Freshwater ecosystem productivity, which is governed by Physico-chemical factors, determines the presence and abundance of meiobenthic fauna. Numerous types of saprophytic organisms live at the bottom of lentic ecosystems including ponds, lakes, and reservoirs, among others.

There may be several explanations for this neglect of meiofauna by scientists. Much of the research on meiofauna in freshwater has concentrated on those species and assemblages associated with interstitial (ie. Hyporheic and groundwater habitats where meiofauna are rightly seen as an important component of the community. It is also possible that the lack of interest in meiofauna is because the taxa are small and difficult to identify.

Meiofauna plays an important role in the food chain of the coastal ecosystem by forming food for the larger animals like larval and juvenile fishes of the beach... Meiofauna is known to occur in great densities even exceeding the secondary production of the seas. The meiofauna has also proved very important in the academic investigations being carried out in the present day world. Now a days, these organisms are being extensively used in various tolerance experience and interesting ecological investigations.

Kehal Dam is an earthfill on Godavari river near Jintur in Parbhani district in the state of Maharashtra in India.it is constructed in 1983. The height of the dam above lowest foundation is 14 m (45.93ft), while the length is 437 m (1433.72 ft). Kehal is a Village in Jintur Taluka in Parbhani, District of Maharashtra State, India. It belongs to Marathwada region. It is situated 14 KM away from sub district headquarter Jintur (Tehsildar Office) and 60 KM away from district

headquarter Parbhani. The dam is one of the most prominent weekend attractions among the locals; it is famous with tourists as well. The dam is most famed for its setting. The background of the dam is picturesque.

The dam is one of those places where one can spend a day indulged in many recreational activities from boating to hiking. The Kehal dam is one of those places where one can spend a day with their friends and family. The dam is open to visitors throughout the year, but the best time to visit the place would be during the summer and winter. During the monsoon, the full ambience cannot be experienced as the frequent rains will make it hard to explore the areas of the dam. Swimming in the water body is not recommended as it can be dangerous during the pump out time.

This dam was constructed for irrigation purpose, however in the passing of the time the water use pattern has changed from agricultural to domestic purpose, such as washing bathing and cleaning etc. the local fishermen started the fishing activities in the reservoirs. Increasing the activities change the quality of our water resources. Direct human activities in the much more effective factor for pollution. The causative factors responsible for degradation of water quality need to be evaluated so as to take proper steps before the situation becomes worst and uncontrollable. This project used is irrigation, fishery purpose.

Review of Literature:

Dr. Nathan Annandale (1907) Published research paper" The fauna of the Brackish Ponds at Port Canning, Lower Bengal researcher study of Indian subcontinent and the scientific exploration on benthos of the Indian subcontinent was initiated at the southern part of the Bengal delta

Commito, J. A. and Tita, G. (2002) Published research paper Differential dispersal rates in an intertidal meiofauna assemblage

Grove, et al., (2006) worked on Distribution of bathyal meiofauna in the region of the Subtropical Front, Chatham Rise, south-west Pacific.

Zushi et al., (2008) studied the anthropogenic impact on the lake ecosystem in Hi-tech city Bangalore, Karnataka. A Hi-tech city Bangalore originally had 290 lakes many decades ago and today about 81 are left and of these 21 are said to be live. Lakes in and around urban areas of Bangalore receive considerable effluents and sewage inflow. The result are very evident showing depletion in oxygen level, high level of chlorophyll 'a', TDS, BOD, phosphate, sulphates, ammonia and high alkalinity etc. which inturn has altered the nutrients concentration contributing to the formation of algal blooms causing high mortality of fishes. A few badly affected lakes in and around Banglore city such as Bellandur, Varthur, Ulsoor, Byramangla, Madivala, Agra and Nagawalaare the one from where in even the hardy fish species like Murrels, Clarias, singhi etc. have completely disappeared. In recent years, limnology of different water bodies of Rajasthan was studied by several workers and total 144 zooplanktonic forms were reported belonging to 3 phyla, 27 families, 64 genera and 105 species. Protozoa (13), Rotifera (39), Copepoda, Cladocera and Ostracoda were represented by 13,39,22 and 6 forms respectively. Biodiversity in the zooplankton has been calculated in the Menhinick's index and values have been discussed in relation to physico-chemical characteristics and primary productivity.

Dhivya & Mohan (2013) Published research paper" A review on meiofaunal study in India". In this present article we have tried to provide only some recent and previous works on meiofaunal study from India.

Pawar (2016): Seasonal variation of zooplankton diversity of Majalgaon reservoir Maharashtra was assessed by Pawar (2016) During the study period 23 species were recorded among them Rotifers (8 species), Cladocera (6 species), copepod (5 species), Ostracod (2 species) and Protozoa (2 species). During summer season number of zooplankton were highest and lowest during winter season.

Lucas et al. (2017): studied the microbiological and physico-chemical parameters of water bodies of Desiroto delosleones National Park located in central region of the Mexico city. They identified five bacterial genera (Escherichia, Pseudomonas, Klebsiella, Shigella and Salmonella). Result of testing of

water is as follow: pH 5.5- 5.9, turbidity 10.7-32.3, Nephlometric turbidity units (NTU's), chemical oxygen demand (COD) 106-450 mg/L., total coliforms 98-956 colony forming units (CFU'S), faccal coliforms 78-807 CFU'S, 90% isolated bacteria were resistant to ampicillin while 25% resistant to ciprofloxacin.

Objectives of the Research Proposal:

The present investigation was undertaken with following objectives--

1) Ecological studies of sites selected

2) To Study the diversity of numerical abundance of meiofauna of Kehal Dam near Jintur.

3) To study the vertical distribution of meiofanua at Kehal Dam in Jintur.

4) Assessment of total meiobenthic fauna.

5) To study the community structure of meiofauna of Kchal Dam

Hypothesis

Water, the most valuable resource that nature has to offer, is essential for life. Without it, there wouldn't be any life, because the majority of biological reactions utilise water as their medium. So studying water bodies is similar to studying life. The most vital natural resource for all living things, whether they are multicellular or unicellular, is water. Since it is necessary for many different things, including domestic ones like irrigation, shipping, electricity production, and industry. Therefore, freshwater has been essential to sustaining life and maintaining the natural balance for both humans and other species. As a result, as human activity has increased, so has the demand for water. Additionally, the phytoplankton, zooplankton, and aquatic macrophytes found in the server can be very helpful in the early detection and monitoring of pollution.

Methodology

Water samples both for water equality and meiofauna samples will be collected at fortnight interval from the pond surface during Research periods. The samples will be collected during early morning hours in between 5.00 to 6.00 am. From the few different sites of the reservoir for Physico chemical parameters. Meiofauna samples will be collected monthly in the early hours by plankton net of mesh size 42 m for two successive years, meiofauna samples will be preserved in 4% formalin indicating name of the sampling site, date, time of sampling, etc. Samples will be observed under microscope and their lucid drawings will be prepared. The present investigation is to be carried out at three to four different sites representing the ecological condition of whole Kehal Dam is to be analysed regularly. Biological parameters include collection, preservation, Identification and study of meiofauna organisms in different seasons of years.

Importance of study

An essential link in the aquatic food chain is the meiofauna community. In the food chain, these organisms act as an intermediary species by moving energy from planktonic algae, which are the primary producers, to the larger invertebrate predators and fish, who in turn eat them.

Potentials for pelagic fisheries are influenced by meiofauna occurrence and distribution. As a result, they serve as the primary prey for many adult fish that consume plankton as well as the majority of fish larvae.

Meiofauna in the aquaculture industry is a good source of food for cultured fish,particularly fry, fingerlings, and juveniles. Zooplankton is indeed one of the biological indicators used to assess the health of aquatic ecosystems.

When compared to phytoplankton, meiofauna are more diverse, and any aquatic ecosystem's meiofaunal variability is primarily determined by patchiness, diurnal vertical migration, and seasons.

Phytoplankton is one of the ecosystem components required by the Water Framework Directive (WFD) to monitor the quality status of freshwater and marine bodies.

One of the biological components of Environmental Impact Assessment (EIA) that must be considered in order to ensure that impacts on biodiversity are taken into account and negative effects be prevented or reduced is zooplankton.

Proposed work plan:

The research work will be completed in three (03) years.

First year: During the first year study period covered research work ie Literature survey related on the topic, Site selection, Preliminary data collection on Field. A detailed study on the monthly distributions of meiofauna species and their relations with physio-chemical parameters of Kehal Dam will be carried out during the study period. Monthly data collection of water sample, Analysis of water samples in the laboratory and noted the results for the future reference work.

Second Year: In this year study period the relationship between physicochemical parameters and meiofauna abundance in Kehal Dam will be find out. Statistical data analysis Mean, Standard deviation, Correlation coefficient with water parameters as well as zooplankton species will be done.

Third Year: In this year the remaining work, repetition of some laboratory work, compilation of all data and preparation of final synopsis, submission of final synopsis, start the thesis writing and typing and submission of thesis in the university will be done.

CHAPTER SCHEME:

The thesis work will be compiled in different chapter scheme as follows.

Chapter I: Introduction.

Chapter II: Review of Literature.

Chapter III: Materials & Methods.

Chapter IV: Results & Discussion

Chapter V: Summary and Conclusion.

Chapter VI: Bibliography

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